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ABSTRACT

The geography standards for Colorado schools offer suggestions for geography education that prepare students to cope with the complexities of contemporary life. The standards give students a firm grasp of the place and terrain that surrounds them; the patterns of human development around the world; and the interactions of peoples, places, and environments. According to the standards, a "geographically informed citizen" should be able to know and understand facts, concepts, and generalizations about geography; apply geographic skills to observe, gather, organize, analyze, and present information; and use geographic perspectives to evaluate, make decisions about, and report on issues, processes, and events. The standards are arranged in an orderly progression from conceptually simple to complex and from acquisition of basic knowledge to the synthesis and application of knowledge. The six standards state that students should know: (1) how to use and construct maps, globes, and other geographic tools to locate and derive information about people, places, and environments; (2) the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change; (3) how physical processes shape the Earth's surface patterns and systems; (4) how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation, and conflict; (5) the effects of interactions between human and physical systems and the changes in meaning, use, distribution, and importance of resources; and (6) how to apply knowledge of people, places, and environments to understand the past and present and to plan for the future. Standards are divided among grades K-4, 5-8, and 9-12. (BT)

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ED 434 045

COLORADO
MODEL CONTENT STANDARDS
FOR
GEOGRAPHY

SO 030 703

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Introduction

Colorado Model Geography Standards

Everything exists in space. Geography's* concern is space. Geography uses a spatial perspective* to study the location*, arrangement, and interaction of people, places*, and environments* over Earth space*. By understanding and using the spatial perspective geography offers, students can study facts, issues, and ideas in depth.

People everywhere have a need to know about the nature of their world, beginning with themselves. Therefore, geography has to do with both asking questions and solving problems, as well as memorization of facts. Geography is composed of three interrelated and inseparable components: knowledge, skills, and perspectives. Investigating the geographic dimension of human experience begins with asking the following:

- Where is it?
- Why is it there?
- How and why does it affect the people in this place?
- In what other places do people confront this issue?
- How and why are these places related?
- What alternatives do people have to improve their situation?

The answers to these and other questions constitute geography.

The Purpose of Geography Education

Geography education fosters the development of citizens who actively seek to apply the knowledge, perspectives, and skills of geography in life situations. Geography education must be useful. Geography education must be responsive to meet the needs of students, as well as the societal and workplace requirements of the community, nation, and the world. Through rigorous instruction and an adaptable K-12 curriculum, geography education helps prepare students to cope with the complexities of contemporary life. Geography serves as the bridge between the physical and the social sciences. The study of geography should give students a firm grasp of the place and terrain that surrounds them; the patterns of human development around the world; and the interactions of peoples, places, and environments.

The need for geographic knowledge is increasing. Technological advances and greater international trading force citizens to have a fuller knowledge of economic, political, social, and environmental issues around the world. The increased economic power and initiatives of other nations, changes in international politics and policies, and the ability of other nations to affect worldwide environmental quality validate the need for United States' students to be internationally competent 21st-century voters, workers, parents, and leaders.

* A glossary of terms can be found on page G-26 of this document. Examples given in this document are used to clarify terms and concepts but not to define or limit curriculum.

The Geographically Informed Person

These geography standards seek to foster the development of a geographically informed person. This means being knowledgeable about people, places, and environments, and being able to apply that knowledge. Geographically informed citizens understand the many interdependent spheres in which they live, and make informed judgments to improve their community, state, country, and world. To meet the challenges of the future, a geographically informed citizen should be able to :

- Know and understand facts, concepts, and generalizations about geography;
- Apply geographic skills to observe, gather, organize, analyze, and present information; and
- Use geographic perspectives to evaluate, make decisions about, and report on issues, processes, and events.

Geography's Content Standards

The geography content standards that follow outline what students should know and be able to do. They integrate geographic knowledge, skills, and perspectives that will remain useful throughout life. The essential skills of asking geographic questions; acquiring, presenting, and analyzing geographic information; and developing and testing geographic generalizations are reflected in the content standards and are worth practicing and mastering.

The geography standards are arranged in an orderly progression from conceptually simple to complex and from acquisition of basic knowledge to the synthesis and application of knowledge. They move from basic tools and locational information in Standard 1 to the fundamental concepts of physical and human geography in Standards 2-4. Then, Standard 5 brings the human and physical systems together to examine their interrelationships. Finally, content from Standards 1-5 is brought together and applied to practical problems in Standard 6.

NOTE: We wish to express our gratitude to the National Assessment Governing Board for providing us with the Geography Framework for the 1994 National Assessment of Educational Progress and the Geography Education Standards Project for Geography for Life. We have relied heavily on these works for the organizational themes and key ideas expressed in the Colorado Model Content Standards for Geography.

Colorado Model Content Standards for Geography

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Colorado Model Content Standards

GEOGRAPHY

1. **Students know how to use and construct maps, globes, and other geographic tools* to locate and derive information about people, places, and environments.**

2. **Students know the physical* and human characteristics* of places, and use this knowledge to define and study regions* and their patterns of change.**

3. **Students understand how physical processes* shape Earth's* surface patterns* and systems*.**

4. **Students understand how economic, political, cultural, and social processes* interact to shape patterns of human populations, interdependence*, cooperation, and conflict.**

5. **Students understand the effects of interactions between human* and physical systems* and the changes in meaning, use, distribution*, and importance of resources*.**

6. **Students apply knowledge of people, places, and environments to understand the past and present and to plan for the future.**

* A glossary of terms can be found on page G-26 of this document. Examples given in this document are used to clarify terms and concepts but not to define or limit curriculum.

STANDARD 1:

Students know how to use and construct maps, globes, and other geographic tools to locate and derive information about people, places, and environments.

RATIONALE

Seeing the world geographically requires an understanding of various tools to be able to interpret and make maps; recognize relationships in and between places; make generalizations; and understand the concepts of distance, direction, location, connection, and association. These abilities and concepts are basic to what makes geography unique--the spatial perspective.

Maps, globes, photographs, satellite images, and geographic information systems* (GIS) are examples of geographic tools. They are essential to portraying, analyzing, evaluating, and predicting human and physical patterns and processes on Earth's surface. They play a critical role in helping people make sense of a complex world, and they improve human capacity to move about and plan activities.*

Developing locational knowledge--for example, knowing where places are and why they are there--is also a part of being a geographically informed person. Locational knowledge is developed through both academic learning and personal experience. This knowledge, developed through factual learning, serves as a personal framework for objective and personal geographic knowledge. Geographic images and the impressions students have of places are organized by these personal frameworks.

Geographic literacy also demands an understanding of how space on Earth is organized. To understand spatial organization requires observation and analysis as well as an awareness that the patterns observed on Earth's surface reflect geographic processes.*

The concepts of distance, direction, location, connection, and association help explain how space is arranged on Earth. Other geographic concepts explain the size and locations of settlements, the connections or lack of connections between and among locations, and the interchange of people, ideas, and goods.

1.1 Students know how to use maps, globes, and other geographic tools to acquire, process, and report information from a spatial perspective.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying the characteristics and purposes of maps, globes, and other geographic tools;
- reading and interpreting information from photographs, maps, globes, graphs, models, and computer programs, if available; and
- displaying information on maps, globes, and geographic models*, and in graphs, diagrams, and charts (*for example*; *designing map keys* and legends**).

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- explaining the characteristics and purposes of and explaining differences among maps, globes, aerial photographs*, geographic models, and satellite images;
- identifying several basic types of map projections* (*for example, Mercator* and Robinson Projections**); and
- interpreting and constructing maps, globes, models, charts, and geographic databases*.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- selecting appropriate maps, map projections, and other graphic representations to analyze geographic problems;
- constructing maps using fundamental cartographic* principles including translating narratives about places and events into graphic representations;
- interpreting maps and other geographic tools, through the analysis of case studies and using data; and
- using geographic tools to represent and interpret Earth's physical and human systems.

1.2 Students develop knowledge of Earth to locate people, places, and environments.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying major geographic features;
- locating places within their own and nearby communities in Colorado;
- locating Colorado in relation to the U.S. and the rest of the world;
- drawing a map of continents and oceans; and
- identifying a specific location on a map using grids.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- identifying and locating each of the fifty states in the United States;
- drawing an accurate map from memory to answer questions about the location of physical and human features* *(for example, given an incomplete map of Europe and Africa, sketch in the borders of the countries around the Mediterranean Sea);*
- identifying and locating physical and human features in their own and nearby communities, in the United States, and in regions of the world; and
- locating places using latitude* and longitude*.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- drawing a complex and accurate map from memory to answer questions about the location of human and physical features;
- identifying and locating physical and human features in their own and nearby communities, in the United States, and in regions of the world *(for example, rivers, mountains, regions, and countries); and*
- analyzing maps people make from memory of the same place to determine similarities and differences.

1.3 Students know how to analyze the dynamic spatial organization of people, places, and environments.

GRADES K-4

In grades K-4, what students know and are able to do includes

- defining basic geographic vocabulary such as the concepts of location, direction, distance, scale*, movement, and region using appropriate words and diagrams;
- describing how places are connected by the movement* of goods and services, ideas and people; and
- making and defending locational decisions for human activity *(for example, where one would locate a new piece of playground equipment).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes;

- explaining fundamental geographic vocabulary such as the concepts of distance, latitude, longitude, interdependence, accessibility*, and connections;
- analyzing the factors affecting the location of human activities *(for example, the location of a planned development or dam);*
- explaining different land use* patterns in urban, suburban, and rural areas;
- describing patterns and processes of diffusion* *(for example, information networks around the world);* and
- solving locational questions requiring the integration of information from two or more sources.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing geographic information using a variety of scales--local, national, international *(for example, growth issues in Limon, New York City, and Southeast Asia);*
- analyzing patterns of distribution and arrangement of settlements; and
- analyzing patterns and processes of the diffusion of human activities.

STANDARD 2:

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

RATIONALE

Knowledge of place helps people make informed decisions about where to live, work, travel, and seek new opportunities. Places form and change as a result of physical and human processes. The physical characteristics of a place are caused by the long term interaction among natural processes. These processes produce the landforms*, water bodies, air, soils, vegetation, animal life, and climate* on which human life depends. The human characteristics of a place result from the interaction of human processes. These processes produce particular settlement patterns*, political systems, architecture, commerce, and other activities and enterprises.*

Regions are areas that display similarity in terms of selected criteria. Regions are created to clarify the complexity of human and physical features on Earth's surface. Regions are geographic generalizations that portray broader patterns from great and oftentimes confusing detail. Studying how and why regions change helps people understand and interpret the past, participate responsibly in the present, and plan effectively for the future.

The way people think about places and regions varies according to how they organize, interpret, and use information. Personal attitudes, experiences, and judgements are important in shaping these variations. Differences in cultural background, age, gender, and experiences contribute to the perceptions people have about places and regions. Understanding places and regions helps one appreciate different perspectives and develop the cooperation needed to resolve conflict.

2.1 Students know the physical and human characteristics of places.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying and classifying the characteristics of places as human or physical; and
- describing how human and physical processes together shape places *(for example, reforestation may prevent erosion* on slopes in Colorado).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing human and physical characteristics of places; and
- explaining how places change due to human activity (*for example, center-pivot technology* produces a distinctive pattern of irrigation on the High Plains).*

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing the human and physical characteristics that give a place meaning and significance; and
- describing the changing human and physical characteristics of places.

2.2 Students know how and why people define regions.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying a region as an area with unifying geographic characteristics; and
- describing similarities, differences, and patterns of change in regions.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- identifying a region by defining its distinguishing characteristics;
- explaining how and why regions change;
- describing the relationships and interactions among regions; and
- analyzing the influences and effects of regional labels and images (*for example, the Sun Belt states attract tourists, retirees, and new businesses).*

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- applying the concept of region to organize the study of a geographic issue using multiple criteria; and
- analyzing changes in regions and recognizing the patterns of those changes (*for example, the Caribbean Basin's transition from a major sugarcane producer to a center for tourism).*

2.3 Students know how culture* and experience influence people's perceptions of places and regions.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying ways in which different people view and relate to places and regions.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing various perspectives associated with places and regions;
- explaining how culture and technology affect perception* of places and regions *(for example, U.S. television programs and movies present images of the U.S. to billions of people around the world)* ; and
- explaining how places and regions serve as cultural symbols *(for example, Jerusalem as a sacred place* for Christians, Jews, and Muslims).*

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing why places and regions are important to human identity;
- comparing and contrasting how and why different groups in society view places and regions differently; and
- analyzing the ways places and regions reflect cultural change *(for example, old mining towns become tourist centers).*

STANDARD 3:

Students understand how physical processes shape Earth's surface patterns and systems.

RATIONALE

Processes of nature create the natural environments upon which human life depends. Understanding Earth's natural or physical features and the processes that produce them is essential to the study of human life on Earth. It is therefore essential to know the characteristics of landforms, soils, water bodies, vegetation, animal life, weather, and climate and how these characteristics are distributed over Earth's surface.

There are a variety of physical processes, such as weathering, erosion, and vegetation change, that shape the environment over time and space. These processes and their associated patterns can be explained by concepts such as system, boundary*, force, threshold*, and equilibrium*.*

Climates, landforms, and soils are physical systems. An ecosystem--a complex physical system--is an interdependent association of plants, animals, air, water, and land. Ecosystems form distinct regions within the biosphere that vary in size, shape, and complexity. Understanding the nature and distribution of ecosystems and the influences of physical processes throughout the environment is crucial to understanding the role of humans within the physical world.*

3.1 Students know the physical processes that shape Earth's surface patterns.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying the components of Earth's physical systems and their characteristics *(for example, air, land, water, plants, and animals and their features)*;
- explaining how Earth-Sun relationships* shape climate and vegetation patterns *(for example, as compared with other regions, polar regions receive low amounts of sun's energy and thus support little vegetation);* and
- describing how features on Earth's surface are shaped by physical processes *(for example, wet regions have many rivers).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing how physical processes shape environmental patterns of air, land, water, plants, and animals;
- explaining how physical processes influence the formation and location of resources;
- describing the consequences of physical processes on Earth's surface *(for example, tropical ocean heating supplies energy for hurricanes);* and
- explaining how Earth-Sun relationships produce day and night, time zones, seasons, and major climatic variations.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- identifying the dynamics of the four basic components of Earth's physical systems: the atmosphere*, biosphere, lithosphere*, and hydrosphere*;
- explaining the interaction of Earth's physical systems *(for example, the interaction of climate and ocean water as exemplified by El Niño);* and
- explaining the variation in the effects of physical processes across Earth's surface *(for example, the effects of wind variations in shaping landforms).*

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants, and animals.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying characteristics of physical systems *(for example, water cycle);*
- describing local environmental features and identifying the physical system to which they belong *(for example, a lake which is part of the water cycle);* and
- comparing patterns and distribution of environments within a physical system *(for example, groups of plant and animal life found in Colorado).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- identifying the local and world patterns of ecosystems*; and
- describing how ecosystems work.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- explaining the factors that affect the distribution and characteristics of ecosystems;
- explaining the importance of ecosystems in understanding the environment; and
- analyzing the diversity and productivity of ecosystems.

STANDARD 4:

Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation, and conflict.

RATIONALE

People are central to geography in that human activities help shape Earth's surface. Human settlements and structures are part of Earth's surface, and humans compete for control of Earth's surface. The geographic study of human populations focuses on location, movement, and the dynamics of size. Populations tend to locate in clusters rather than spread out evenly over the land surface; these patterns depend on both physical and human environments. People make long-term, permanent migrations and short-term, temporary journeys, often on a daily basis. Migration is often the result of the way people perceive a place. Population growth, decline, and equilibrium patterns are influenced by medical, cultural, and economic issues.

Culture defines every human society because it encompasses identity, purpose, place, and vision. Culture has meaning beyond a single group in a specific place. The study of the locations, spatial patterns, and processes of cultures provides a means to analyze how people interact with each other and with their environments. Culture is a force that can both unify and impede connections and communication among peoples.

In the developed, urbanized, and industrialized countries, economic systems are complex, fast-moving, and technologically dependent. Developing countries have vast, unstructured urban areas surrounded by traditionally based rural areas. But economic interdependence links the developed and developing countries.

Settlements, whether rural or urban, have many identifiable patterns, such as architecture, sacred space, and economic activities. Settlement patterns reflect changing cultural attitudes toward place as well as shifts in technology, population, and resource use.

Earth space is divided into political, economic, social, and cultural spaces, ranging in scale from local to global. Political spaces, which are created by both cooperation and conflict, may be as small as the school attendance zone or as large as an alliance among nations. Economic space includes a firm's marketing regions and international trading blocs. Social and cultural spaces range from households to the administrative regions of world religions. The partitioning of space into social, economic, and political spheres of influence is dynamic and ongoing.

4.1 Students know the characteristics, location, distribution, and migration of human populations.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying the distribution of population, both locally and in other parts of the world;
- identifying the characteristics of populations, both locally and in other parts of the world; and
- identifying the causes of human migration.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing the demographic* structure of a population *(for example, the age-sex structure as shown in a population pyramid*);*
- explaining reasons for variation in population distribution; and
- analyzing the causes and types of human migration and its effect on places.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- evaluating trends and effects of world population numbers and patterns; and
- analyzing the physical and cultural impact of human migration.

4.2 Students know the nature and spatial distribution* of cultural patterns.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying how the elements of culture affect the ways in which people live; and
- describing how patterns of culture vary across Earth's surface *(for example, using thematic maps* to show patterns of language, religion, and housing types in a community).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- explaining the spatial distribution of cultures, both locally and in other parts of the world;
- describing how cultures and cultural landscapes* change; and
- comparing and contrasting elements of different cultural landscapes.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing how cultures shape the character of a region;
- describing the processes of cultural diffusion*; and
- describing the effect of technology on the development and change of cultures.

4.3 Students know the patterns and networks of economic interdependence.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying the location and distribution of major economic activities in Colorado; and
- describing economic networks used in daily life *(for example, transportation and communication networks).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- identifying the factors that influence the location and distribution of economic activities;
- explaining why and how countries trade goods and services;
- explaining reasons for patterns of economic activities on Earth's surface; and
- explaining how changes in technology, transportation, communication, and resources affect the location of economic activities.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- comparing and contrasting the characteristics and distribution of economic systems;
- explaining how places of various size function as centers of economic activity;
- analyzing factors influencing economic interdependence of countries, including world trade;
- analyzing connections among local, regional, and world economies *(for example, transportation routes, movement patterns, and market areas);* and
- analyzing how and why levels of economic development vary among places.

4.4 Students know the processes, patterns, and functions of human settlement.

GRADES K-4

In grades K-4, what students know and are able to do includes

- classifying the types and patterns of settlements;
- identifying the factors that affect where people settle *(for example, the availability of transportation and resources);* and
- describing the spatial characteristics of cities *(for example, residential, recreational, central business district, industrial, commercial areas).*

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- explaining the causes and effects of urbanization* *(for example, rural-to-urban migration leads to urbanization);* and
- describing, locating, and comparing different settlement patterns throughout the world.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing the size, arrangement, structure, and function of urban areas;
- comparing and contrasting the differing characteristics of settlement in developing and developed countries; and
- examining how and why large cities grow together.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

GRADES K-4

In grades K-4, what students know and are able to do includes

- describing how and why people create boundaries; and
- describing how cooperation and conflict affect neighborhoods and communities.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing how cooperation and conflict among people contribute to political, economic, and social divisions of Earth's surface; and
- describing the forces and processes of cooperation that unite people across Earth's surface *(for example, the nations of Western Europe have joined together in the European Union).*

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing why and how cooperation and conflict are involved in shaping the distribution of social, political, and economic spaces on Earth at different scales – local, national, and international; and
- analyzing how differing points of view and self-interests play a role in conflict over territory and resources.

STANDARD 5:

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution, and importance of resources.

RATIONALE

Human use of resources can have both positive and negative effects. Increasingly, people are called upon to solve complex problems resulting from the interaction of human and physical systems. Physical systems offer opportunities and constraints for human activity. Humans control and use the output of physical systems--natural resources--to get food and shelter needed to survive and prosper; natural resources provide food and shelter. Agriculture, the foundation of civilizations, is perhaps the most massive alteration of physical systems. Humans sometimes face the consequences of exceeding their environment's capacity and resource base. Changes to the environment created by humans play a significant role in shaping local, global, economic, social, and political conditions.

The concept of resources has changed over time in much of the world. Initially, when populations were smaller, resources were assumed to exist in abundance and were available for almost limitless use. The concept of preservation did not evolve until some resources appeared to be in short supply. Unwise resource use can negatively affect the environment and quality of life. Responsible resource use can enhance the environment and quality of life.

Humans interact with the environment through technology. Technology has enabled us to use some natural resources at ever-increasing, possibly unsustainable, rates. But new technologies also change our perception of resources. For example, nuclear reactors now generate a substantial portion of the world's electricity and once-discarded materials are now recycled.

5.1 Students know how human actions modify the physical environment.

GRADES K-4

In grades K-4, what students know and are able to do includes

- identifying how people depend upon, adapt to, and modify the physical environment.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing how human modifications of physical environments in one place often lead to changes in other places;
- explaining the role of technology in the human modification of the physical environment *(for example, damming of the Colorado River, greening of the Negev Desert in Israel);* and
- describing ways that humans depend upon, adapt to, and affect the physical environment.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing ways the humans depend upon, adapt to, and affect the physical environment;
- evaluating ways in which technology has expanded human capacity to modify the physical environment; and
- explaining the possible global effects of human modification of the physical environment.

5.2 Students know how physical systems affect human systems.

GRADES K-4

In grades K-4, what students know and are able to do includes

- describing how the physical environment provides opportunities for and places constraint on human activities.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- explaining how the characteristics of different physical environments provide opportunities for or place constraints on human activities; and
- describing how natural hazards* affect human activities.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- comparing and contrasting how changes in the physical environment can increase or diminish its capacity to support human activity;

- identifying and evaluating alternative strategies to respond to constraints placed on human systems by the physical environment *(for example, the use of irrigation in arid environments);* and

- analyzing how humans perceive and react to natural hazards.

5.3 Students know the changes that occur in the meaning, use, location, distribution, and importance of resources.

GRADES K-4

In grades K-4, what students know and are able to do includes

- describing the role of resources in daily life *(for example, discussing the recycling of materials);*

- identifying the characteristics of renewable* and nonrenewable resources*; and

- identifying the spatial distribution of resources.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing the role of resources in daily life *(for example, discussing the recycling of materials);*

- describing the worldwide distribution and use of resources;

- identifying how technology affects the definition of, access to, and use of resources;

- describing why people have different viewpoints with respect to resource use;

- explaining the fundamental role of energy resources; and

- describing ways that resources can be recycled.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing how the changing distribution of resources affects the patterns of settlement;

- evaluating policies and programs for resource use and management; and

- analyzing the effects of economic activity in modifying and transforming resources.

STANDARD 6:

Students apply knowledge of people, places, and environments to understand the past and present and to plan for the future.

RATIONALE

This standard deals with the application of geographic knowledge, skills, and perspectives to practical problems. Everything happens in time and space. Therefore, a thorough interpretation of the past must include the geographic context of the event. This requires addressing questions such as: Where did the event occur? In what kind of human and physical environment did it happen? How was the event related to events in other places? What resources and technologies did people have? How did they move from place to place? What environmental constraints did they face? Any interpretation of human events and conditions that ignores the geographic context is incomplete and unrealistic.

In the next century, humans will face many complex and controversial issues concerning the development needs of a rapidly growing human population and the Earth's ability to sustain that population. To cope with these fundamental issues effectively, tomorrow's citizens must be geographically informed.

6.1 Students know how to apply geography to understand the past.

GRADES K-4

In grades K-4, what students know and are able to do includes

- describing how places change over time; and
- describing how places and environments may have influenced people and events over time.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- describing changes in the spatial organization of a society over time;
- describing how places and environments have influenced events and conditions in the past; and
- explaining how differing perceptions of places, people, and resources have affected events and conditions in the past.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- analyzing how changing perceptions of places and environments affect the behavior of people; and
- analyzing the fundamental role that places and environments have played in history *(for example, the Russian winter played an important part in the defeat of Napoleon's army).*

6.2 Students know how to apply geography to understand the present and plan for the future.

GRADES K-4

In grades K-4, what students know and are able to do include

- describing issues in communities from a spatial perspective; and
- identifying personal behaviors that can affect community planning.

GRADES 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

- explaining issues in communities from a spatial perspective; and
- explaining a contemporary issue using geographic knowledge, skill and perspectives.

GRADES 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- evaluating a contemporary issue using geography knowledge, skills, and perspectives; and
- comparing and contrasting how different viewpoints influence the development of policies designed to use and manage Earth's resources.

Glossary

Accessibility - the relative ease with which a place can be reached from other places.

Aerial (air) photograph - a photograph of part of Earth's surface usually taken from an airplane.

Atmosphere - the envelope of gases, aerosols, and other materials that surrounds Earth and is held close by gravity. The gases are dominated by nitrogen, oxygen, argon, and carbon dioxide and include much smaller percentages of helium, methane, and hydrogen.

Biosphere - the realm of Earth that includes all plant and animal life forms.

Boundary - the limit or extent within which a system exists or functions, including a social group, a state, or physical feature.

Cartographic - pertaining to the design and creation of maps and other geographic representations.

Case study - the in-depth examination of a geographic issue in a particular place.

Climate - long-term trends in weather elements and atmospheric conditions.

Center-pivot irrigation - the use of large sprinklers that distribute irrigation water in a circle, which results in large circular irrigated field patterns.

Connections - linkages between places.

Culture - learned behavior of people, which includes their belief systems and languages, their social relationships, their institutions and organizations, and their material goods – food, clothing, buildings, tools, and machines.

Cultural diffusion - the spread of cultural elements from one culture to another.

Cultural landscape - the human imprint on the physical environment; the humanized landscape as created or modified by people.

Database - a compilation, structuring, and categorization of information (print or electronic) for analysis and interpretation.

Demographic - pertaining to the study of population statistics, changes, and trends based on various measures of fertility (adding to a population), mortality (subtracting from a population), and migration (redistribution of a population).

Diffusion - the spread of people, ideas, technology, and products among places.

Distribution -the arrangement of items over a specified area (synonymous with spatial distributions).

Earth - when capitalized, this refers to the planet named Earth.

Earth space (see spatial) - the spatial dimension of Earth's surface, the study of which is called geography. The term is used in contrast with the popular term "space", which refers to outer space (away from Earth).

Earth-Sun relations - the study of the relationships between the Sun and the Earth, which explains day and night, seasons, and major climatic variations on Earth.

Ecosystem (ecological system) - a system formed by the interaction of all living organisms (plants, animals, humans) with each other and with the physical and chemical factors of the environment in which they live.

Environment - everything in and on Earth's surface and its atmosphere within which organisms, communities, or objects exist. The natural or physical environment refers to those aspects of the environment produced by natural or physical processes; the human or cultural environment refers to those aspects of the environment produced by human or cultural processes.

Equilibrium - the point in the operation of a system when driving forces and resisting forces are in balance.

Erosion - the wearing away of parts of Earth's surface by natural forces of wind, water, and ice. Human use of the land can have a major effect on the rate of erosion.

Geographic Information System (GIS) - a geographic database that contains information about the distribution of physical and human characteristics of places or areas. In order to test hypotheses, maps of one characteristic or combination can be produced from the database to analyze the data relationships.

Geographic model - an idealized, simplified representation that seeks to portray or explain a particular geographic reality.

Geographic tool - a device used to compile, organize, manipulate, store, report, or display geographic information, including maps, globes, graphs, diagrams, aerial and other photographs, satellite-produced images, geographic information systems, and computer databases as well as other software.

Geography - the scientific study of the Earth's surface. Geography describes and analyzes the spatial variations in physical, biological, and human phenomena that occur on the surface of the globe and treats their interrelationships and their significant regional patterns.

Human characteristics - features and patterns of features on Earth's surface created by humans.

Human features - features and patterns of features on Earth's surface created by humans, including dwellings, crops, roads, machines, places of worship, and other cultural elements; synonymous with human characteristics and cultural landscapes.

Human process - a course or method of operation that produces, maintains, and alters human systems on Earth, such as migration or diffusion.

Human system - a collection of human entities that are linked and interrelated, such as a city, an airport, or a transportation network.

Hydrosphere - the water realm of Earth, which includes water contained in the oceans, lakes, rivers, ground, glaciers, and water vapor in the atmosphere.

Interdependence - people relying on each other in different places or in the same place for ideas, goods, and services.

Land use - the range of uses of Earth's surface made by humans. Uses are classified as urban, rural, agricultural, forested, etc., with more specific subclassifications useful for specific purposes (for example, low-density residential, light industrial, nursery crops).

Landform - the shape, form, or nature of a specific physical feature of Earth's surface (for example, plain, hill, plateau, mountain).

Latitude - assuming that the Earth is a sphere, the latitude of a point on the surface is the angle measured at the center of the Earth between a ray lying on the plane of the Equator and a line connecting the center with the point on the surface.

Legend - synonymous with map key.

Lithosphere - the uppermost portion of the solid Earth, including soil, land, and geologic formations.

Location - the position of a point on Earth's surface expressed by means of a grid (absolute) or in relation (relative) to the position of other places.

Longitude - the position of a point on Earth's surface expressed as its angular distance, east or west, from the prime meridian to 180 degrees.

Map key - an explanatory description or legend to features on a map or chart.

Map projections - a mathematical formula by which the lines of a global grid and the shapes of land and water bodies are transferred from a globe to a flat surface.

Mercator projection - devised by Gerhard Mercator for his world map in 1569, this projection has the parallels and meridians as straight lines intersecting at right angles. Its main advantage is that lines of constant direction are straight lines, so that it is used widely for navigation; its major disadvantage is that the size of areas becomes increasingly exaggerated toward the poles.

Movement - in geography, the interaction across Earth space that connects places. This interaction occurs with flows of human phenomena, such as goods, people, and ideas, and with natural phenomena such as winds, rivers, and ocean currents.

Natural hazard - an event in the physical environment, such as a hurricane or earthquake, that is destructive to human life and property.

Natural process - synonymous with physical process.

Nonrenewable resources - a finite resource that cannot be replaced once it is used (for example, petroleum, minerals).

Perception - the feelings, attitudes, and images people have of different places, peoples, and environments. The images people have in their heads of where places are located are called perceptual or mental maps.

Physical characteristics - features and patterns of features on Earth's surface caused by physical or natural processes, such as landforms, vegetation, and atmospheric phenomena.

Physical /natural process - a course or method of operation that produces, maintains, or alters Earth's physical systems, such as glacial processes eroding and depositing landforms.

Physical /natural systems - climates, landforms, and soils are examples of natural or physical systems. For a more complete definition of physical systems, refer to the rationale statement on page thirteen.

Places - locations having distinctive characteristics which give them meaning and character and distinguish them from other locations.

Population pyramid - a bar graph showing the distribution by gender and age of a country's population.

Region - an area with one or more common characteristics or features, which give it a measure of homogeneity and make it different from surrounding areas.

Renewable resource - a resource that can be regenerated if used carefully (for example, fish, timber).

Resource - an aspect of the physical environment that people value and use to meet a need for fuel, food, industrial product, or something else of value.

Robinson projection - developed by Arthur Robinson in 1963, this projection has the parallels as straight lines; the central meridian is a straight line but the others are arcs. No point is completely free of distortion, which increases toward the poles. It is widely used for thematic world maps.

Sacred place - an area recognized by a group of people to have religious significance.

Satellite Image - an image produced by a variety of sensors, such as radar, microwave detectors, and scanners, which measure and record electromagnetic radiation. The collected data are turned into digital form for transmission to ground receiving stations. The data can be reconverted into imagery in a form resembling a photograph.

Scale - on maps, the relationship or ratio between a linear measurement on a map and the corresponding distance on Earth's surface. For example, the scale 1:1,000,000 means that one unit (inch or centimeter) on the map and represents 1,000,000 similar units on Earth's surface. The term **small scale** sometimes refers to the study of small areas.

Settlement pattern - the spatial distribution and arrangement of human habitations, including rural and urban centers.

Social process - a course or method of operation that produces, maintains, or alters human systems on Earth, such as migration or diffusion. Synonymous with human process and cultural process.

Spatial - pertains to space on Earth's surface; refers to distances, directions, areas and other aspects of space.

Spatial distribution - the location shown on a map of a set of human or physical features that represents an aspect of a specified phenomenon within an area, for example, the set of locations of all two-story houses built between 1930 and 1940 in Denver.

Spatial perspective - the point of view that emphasizes the essential issue of place--embodied in specific questions such as Where is it? Why is it there? --as a fundamental dimension of human experience.

Spatial organization - the mode in which Earth space is structured by or implicated in the operation of social and/or physical processes.

Surface pattern - the real or geometric arrangement of the human and/or physical features in an area on or near Earth's surface, as in the pattern of a spatial distribution.

System - a collection of entities that are linked and interrelated, such as hydrologic cycle, cities, and transportation modes.

Technology - application of knowledge to meet the goals, goods, and services needed and desired by people.

Thematic map - a map representing a specific spatial distribution, theme, or topic (for example, population density, cattle production, or climates of the world).

Threshold - in physical and environmental processes, the point in the operation of a system when a jump or relatively great change occurs in response to a minor input; in an economic context, the minimum population needed for a service (for example, an auto dealer) to locate in a central place.

Urbanization - a process in which there is an increase in the percentage of people living/working in urban places as compared to rural places.

Weathering - the breaking down, disintegration, or dissolving of Earth's surface and subsurface rocks and minerals by physical, chemical, and organic process.

References

Guidelines for Geographic Education: Elementary and Secondary Schools, prepared by the Joint Committee on Geographic Education of the National Council for Geographic Education and the Association of American Geographers. 1984.

Geography Education Standards Project. *Geography for Life*. Washington, D.C. National Geographic Research and Exploration. 1994.

Hill, A. David and McCormick, Regina. *Geography: A Resource Book for Secondary Schools*. Santa Barbara, CA. ABC-CLIO. 1989.

Kembel, Walter, Ed. *Space and Places*. Indiana, PA. National Council for Geographic Education. 1995.

Ludwig, Gail, and others. *Directions in Geography*. Washington, D.C. National Geographic Society. 1991.

NAEP Geography Consensus Project, Council of Chief State School Officers with the National Council Geographic Education, *Geography Assessment Framework for the 1994 National Assessment of Educational Progress*, National Assessment Governing Board, U.S. Dept. of Education, Washington, D.C. 1993.

Slater, Frances. *Learning Through Geography*. Indiana, PA. National Council for Geographic Education. 1993.